

NOTES ON NORTH AMERICAN PSYLLIDÆ.

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Having been engaged lately in putting together the material for a study of the Psyllidæ of North America, I would, in this brief paper, offer a preliminary statement of some of the results, and append a few descriptions of the more remarkable forms for publication in the proceedings.

Knowledge of the European Psyllidæ has greatly advanced, both as to morphology and biography, since the time of Linnæus and Latreille, mainly through the labors of Hartig, Förster, Flor, and more especially, in recent years, through the important publications of Dr. Franz Löw, of Vienna. The Psyllid fauna of the United States has, however, received little attention from American entomologists; yet it is rich in species which are of great interest.

What has hitherto been done in the classification of the North American Psyllidæ may be gathered from the following list of the species actually described. A similar list was published in the "Canadian Entomologist" by Mr. Wm. H. Ashmead, (1881,) but it was somewhat incomplete, and contained some inaccuracies.

1. *Diraphia vernalis* Fitch.
2. *Diraphia femoralis* Fitch.
3. *Diraphia calamorum* Fitch.
4. *Diraphia maculipennis* Fitch.
5. *Aphalara arctica* Walker.
6. *Psylla ilecis* Ashmead.
7. *Psylla rhois* Glover.
8. *Psylla quadrilineata* Fitch.
9. *Psylla carpini* Fitch.

10. *Psylla annulata* Fitch.
11. *Psylla pyri* (Linn.), Harris, Fitch, Glover, *et al.*
12. *Psylla pyrisuga* (Förster), Barnard.
13. *Psylla venusta* O.-Sacken.
14. *Psylla celtidis-mamma* Riley.
15. *Psylla tripunctata* Fitch.
16. *Psylla rubi* Walsh and Riley.
17. *Psylla diospyri* Ashm.
18. *Psylla magnoliæ* Ashm.

Thus the number of described species amounts only to eighteen. All other names occurring in Ashmead's list and in Walker's British Museum list, as well as in cabinets, are manuscript names. Of the eighteen species, four are merely synonyms, while one is an importation.

The synonyms have been principally caused by the fact that the imagines of several species quite persistently occur on two or more widely different plants: thus *Psylla tripunctata* is equally common on *Rubus* and on *Pinus*; but while this is true of the mature insects, yet each species, so far as we yet know, is confined in its adolescent stages to one genus of plants, and often to one species.

According to the latest classification by Dr. Franz Löw in his paper, "Zur Systematik der Psylloden,"* our described species must be placed as follows:

1.—SUB-FAMILY LIVIINÆ.

1. *Livia vernalis*, Fitch, (synonyms: *Diraphia femoralis* F. and *D. calamorum* F.).
2. *Livia maculipennis*, Fitch. (*Diraphia maculipennis* Fitch.)

This sub-family, which has but two representatives in Europe, is at once recognizable by the flat, not prominent eyes, and by the form of the antennæ, the second joint being the largest.

* Verhandlungen der zoologisch-botanischen Gesellschaft in Wien, 1878.

II.—SUB-FAMILY APHALARINÆ.

3. *Aphalara ilicis*, Ashm. (*Psylla ilicis* Ashm.)

This sub-family was established by Löw upon genera in which the petiolus cubiti is as long as, or longer than, the discoidal part of the subcosta, and in which the frontal lobes are either absent or not separated from the vertex. Of the four European genera of this sub-family recognized by Franz Löw I have thus far seen American representatives of but one genus, viz: *Aphalara*, which appears to be well represented in the United States.

III.—SUB-FAMILY PSYLLINÆ.

4. *Calophya rhois* Glover.* (*Psylla rhois* Glover.)5. *Psylla pyricola* Förster, (synonyms *Ps. pyri*, Harris, Fitch, Glover, etc.; *P. pyrisuga* Barnard.)

This is the Pear-tree Psylla of our northern and western States, and its reference to Förster's species is made after comparison with European specimens received from Meyer-Dür and Lichtenstein.

6. *Psylla quadrilineata* Fitch.7. *Psylla arctica*, Walker. (*Aphalara arctica* Walk.)†8. *Psylla carpini* Fitch.

* It was one of Glover's boasts that he never described a species: yet on account of the marked colorational characters of this insect, he has unwittingly given, in two or three words, a recognizable description of it with figures. (Agricultural Report for 1876, p. 33, published in 1877.) The name conflicts with Fr. Löw's *Calophya (Psylla) rhois*, also published in 1877, (Abh. K. K. zool. bot. Ges. Wien, 1877, p. 148.) Without attempting to decide which of the two names has priority, but to avoid confusion, I would substitute for our North American species the name of *nigripennis*, under which Fitch described the species in his manuscript notes. Löw's description is a very careful one, while that of Glover is accidental and unintentional, the name being used under the impression that the species had already been described.

† This is described from Albany River, Hudson's Bay, (List of Homoptera, Brit. Mus., part 4, p. 931,) as an *Aphalara*. It is unknown to me, but Mr. Jno. Scott, (Trans. Ent. Soc. London, 1882, p. 459,) who has examined the types, declares it to be a genuine *Psylla*.

9. *Psylla annulata* Fitch.
10. *Pachypsylla* (n. gen.) *venusta*, Osten-Sacken. (*Psylla venusta* O.-S.; *Ps. c.-grandis* Riley.)
11. *Pachypsylla celtidis-mamma*, Riley. (*Psylla c.-mamma*, Riley.)

The sub-family Psyllinæ which is characterized by prominent eyes, short petiolus cubiti, and by the frontal cones (when present) being well separated from the vertex, seems to be well represented in our fauna, but a large portion of our species cannot be included in the European genera. Of the ten genera into which Löw has divided the Psyllinæ, I have only been able to recognize two in our fauna, viz: Calophya Fr. Löw, and Psylla, as restricted by Löw. The former genus includes our two Sumac Psyllids, and a third of unknown habits, but presumably also living on Rhus. Of Psylla a moderate number of species are in my collection, indicating the occurrence of the genus on both slopes of our continent.

Of the four new genera which I have recognized in our fauna, the most interesting appears to be that which includes our Hackberry Psyllids, interesting not only because of the peculiar structural characters exhibited in the larva and imago states, but more especially because of the fact that they are true gall-makers. I have called this new genus Pachypsylla, and append descriptions of it and of the principal species which it embraces.

IV.—SUB-FAMILY TRIOZINÆ.

Next to the Liviinæ this is the best defined sub-family of Psyllidæ, and it is at once recognizable by the prominent eyes, the long dorsulum and the absence of the petiolus cubiti. It includes the following species described from our fauna:

12. *Trioza tripunctata*, Fitch. (*Psylla tripunctata* Fitch; synonym: *Psylla rubi* Walsh & Riley.)
13. *Trioza magnoliæ*, Ashm. (*Psylla magnoliæ* Ashm.)
14. *Trioza diospyri*, Ashm. (*Ps. diospyri* Ashm.)

Of the genera described, only one, *Trioza*, has thus far been found in North America, but this genus is represented by numerous species. The venation of the front wings offers good characters for groups, while specific characters are best expressed in the genital armature of the male. Two species from Florida exhibit very remarkable structural characters which justify the establishment of two new genera here characterized.

In the following descriptions I have used those orismological terms which seem least likely to confuse, chiefly following Fr. Löw and other continental authors. The width of the head includes the eyes, and length measurements are from vertex to tip of closed wing.

Sub-family PSYLLINÆ.

PACHYPSYLLA, new genus.

Body very robust, transversely and longitudinally convex; in some species glabrous, in others finely pruinose with exceedingly short and sparse pubescence. Head large, vertical, vertex rugoso-punctate, longer than usual, but slightly or not at all narrowed anteriorly; anterior marginal line well marked, straight; frontal cones not in the same plane as the vertex, more or less oval, pubescent, vertical, about half as long as the vertex; anterior ocellus not visible from above; discoidal impressions punctiform or foveiform (*c.-gemma*); antennæ as long as (or even shorter than) the width of the head, stout, intermediate joints sub-turbinate. Pronotum of usual length (short in *c.-gemma*), steeply ascending posteriorly, rugosely punctate, of equal width, lateral impressions well marked, front and hind margins gently curved; dorsulum less developed than in the true *Psylla*, more than twice as broad as long; sculpture of dorsulum and mesonotum varying according to species, either nearly smooth (*c.-gemma*) or alutaceous (*c.-venusta*) or rugoso-punctulate (*c.-mamma* and the rest of the species). Front wings varying in length and form according to species, flat (less so in *c.-gemma*), sub-membranaceous, and not rugose in the majority of the species (more leathery and rugose in *c.-gemma*), pterostigma more or less distinct, tip of wing between radius and fourth furcal and nearer to the costal than to the inner margin; petiolus cubiti much shorter than the discoidal part of the subcosta; marginal cells unusually long, narrow (less so in *c.-gemma*), and of nearly equal size. Metasternal processes shorter than in *Psylla*. Genital plate of male broad, convex at the sides, slightly lobed posteriorly, forceps simple; genital plates of female simple, of varying length. Legs stouter than usual. Larva and pupa with spinous tip of abdomen and sides of body not acute.

The species, so far as known, are all gall-makers, and confined to the Hackberry (*Celtis*).

There is no genus, among those characterized by Dr. Fr. Löw, with which *Pachypsylla* can properly be compared. In the convexity of the body it greatly surpasses *Psylla*, from which it is at once distinguished by the vertical and rugoso-punctate head, the quadrate vertex, the short frontal cones, the less filiform and stout antennæ.

***Pachypsylla venusta* (OSTEN-SACKEN.)**

Average length, 5.6 mm. General color, brownish-yellow, variegated with darker brown, often with a greenish tinge, thorax with brown markings of the usual shape, front wings whitish speckled with brown, legs variegated with black. Head with the eyes narrower than the widest part of the thorax, vertical, slightly emarginate behind, vertex about one-third wider than long, nearly flat, not narrowing anteriorly, with anterior marginal line straight, slightly elevated along the inner margin of the eyes, surface rugoso-punctate, discoidal impressions punctiform, very distinct, median line fine; frontal cones below the plane of the vertex, vertical, very little longer than wide at base, rounded at tip and sides, not half as long as the vertex, and together only half as wide as the vertex, moderately divergent, rugoso-punctate, sparsely pubescent, and in color often brighter yellow than the vertex; antennæ as long as the head is wide, joint 2 a little longer than 1, joint 3 twice as narrow as 2 and but little longer than 4, the succeeding joints gradually decreasing in length, the terminal three closely conjoined, very little thicker than the preceding joints; each of the intermediate joints at tip a little wider than the base of the following joint; color, pale yellow, tips of intermediate joints and the whole of the last two joints black; terminal bristles very short. Pronotum moderately short, of equal width, slightly emarginate behind, steeply ascending posteriorly, sculptured and colored as the head; lateral impressions well marked. Dorsulum well developed, thrice as long as the pronotum and about twice as wide as long; posterior lobe distinctly longer than the anterior; hind margin sinuate each side and truncate at middle; surface finely alutaceous; color, light brownish yellow, with a large brown apical spot divided by a yellow median line. Mesonotum convex, wider than the head, sculptured as the dorsulum, with four vittæ (longitudinal) of brown or greenish-brown color, the outer ones usually wider than the inner ones, all bordered and divided transversely by lines of brighter yellow. Front wings two and one-third times longer than their greatest breadth, widest at basal half, whitish, semi-transparent, marked with brown, as follows: an oblique and gradually-diminishing band running from the tip of radial cell to middle of first furcal vein, more or less interrupted between, but persistent on the veins; a series of four large quadrate marginal spots at tips of furcals, a spot at base of pterostigma; paler specimens have these marks well relieved on a uniformly semi-transparent wing, while darker specimens have them more or less suffused with brown atoms, which often obscure the apical half of the wing and gradually intensify towards the posterior margin, where they always leave four clear, whitish terminal spaces between the veins, the fourth least distinct and sometimes obsolete; costal margin much rounded at base, thence straight, tip very narrowly rounded, nearly angulated, inner margin at terminal third rounded. Venation moderately strong, discoidal part of subcosta elevated into a prominent callus, pterostigma distinct, moderately long; petiolus cubiti as long as the stem of the first fork and one-half as long as the discoidal part of subcosta, which is as long as, or a little longer than, the basal part; radius nearly parallel to the stem of second or outer fork and fourth furcal, slightly curved upward at tip, all fur-

calcs terminating very obliquely upon the margin, the first slightly shorter than the fourth, the second one-fourth longer than the first, which terminates at about the middle of the inner margin; stem of second fork as long as the third furcal; tip of wing distinctly between the radius and the fourth furcal; outer basal cell one-fourth shorter than radial cell; second marginal cell as long, but not quite as wide, as first marginal cell; margin of cubital cell as long as that of second marginal. Metasternal processes nearly twice as long as wide, constricted at base, apex not sharply pointed; legs yellowish gray, femora usually with the upper edge and a sub-apical spot blackish, claw-joint black. ♂: genital segment as long as the two preceding ventral segments together, wider than usual; color, yellowish brown, shining, with sparse, long pubescence; plate nearly as high as the length of the segment, wide, rounded and convex at the sides, provided with a distinct lateral lobe; anterior margin straight, posterior margin forming a nearly semi-circular line, greatest width at apical third; on its outer face the plate is convex and smooth anteriorly; the posterior lobe is rugose, and separated from the plate itself by a wide and shallow depression. Forceps two-thirds as high as the plate, front margin straight, hind margin slightly sinuate at basal half, tip rounded, outer face smooth and very shining.

♀: genital segment a little longer than the rest of the abdomen, opaque, brownish yellow with black markings, with moderately short and inconspicuous pubescence, upper plate gradually tapering apically and drawn out in a very sharp point, which is slightly turned upward; lower plate a little shorter than the upper, rapidly narrowing from the base and pointed at tip, but by no means as sharply as the upper plate.

Described from numerous specimens reared from a large woody gall formed on the petiole of the leaf of *Celtis*, a part of the base of the leaf being included, so as to form a groove on one side.

***Pachypsylla celtidis-mamma* (Riley.)**

Average length, 4 mm. Color dirty yellowish-brown, frequently dark brown or brownish-yellow, upper side usually with a greenish tint; antennæ and legs yellowish, variegated with black; wings subhyaline and whitish, speckled with brown. Head and thorax more strongly rugoso-punctate than in *venusta*, opaque and with sparse, extremely short, but glistening pubescence. Vertex as in the preceding species, frontal cones more transverse; antennæ a little shorter than the width of the head, coloration and relative length of the joints as in *venusta*, intermediate joints more distinctly turbinate. Parts of thorax formed and colored as in *venusta*, a little less convex, and the brown color more predominant, with markings on dorsulum and mesothorax less clearly defined. Front wings narrower and, therefore, apparently longer than in *venusta*, very little wider at terminal third than at basal third; costal margin at base but slightly convex, at tip more broadly rounded; whitish, subhyaline, more or less densely covered with small, brownish, scale-like specks, as follows: an oblique and gradually narrowing band (extending from tip of pterostigma to near tip of radius), which runs across the wing to the tip of the first furcal, is usually freer from these dots than the rest of the wing, while its edges are usually more crowded with the dots, so as to bring the pale band into greater relief; quite frequently there is an intensified patch of brown about discoidal part of subcostal vein and at all vein furcations; also, the terminal space outside the pale oblique band is often uniformly dark, but with three marginal pale spots (one in each of the cubital, second marginal, and discoidal cells) always more or less distinctly relieved. This pale band is sometimes obsolete and the wing more or less evenly speckled; exceptionally, both inside and outside the oblique band, there is a border of variable extent, of a uniform dark brown color, not composed of small dots; pterostigma distinct, mod-

erately wide and long; petiolus cubiti a little more than half as long as the stem of first fork, and fully three times shorter than the discoidal part of subcosta, which is distinctly longer than the basal portion; radius nearly parallel to stem of second fork and fourth furcal, hardly curved upward at terminus, furcals terminating very obliquely upon the margin, third and fourth nearly equal in length, second very little longer than third, and first very little shorter than third, and terminating at about the middle of the margin; stem of second fork as long as third furcal; tip of wing between radius and fourth furcal; outer basal cell one-third shorter than radial cell, marginal cells of equal length, the second a little wider than the first. Metasternal processes pale greenish, cylindrical, hardly narrowed toward the tip, which is obtuse, not pointed. Legs pale brownish-yellow, femora usually variegated with black, last tarsal joint blackish. Abdomen either entirely blackish or brown, or brownish-yellow, in fresh specimens, suffused in pink.

♂: genital segment a little longer than the preceding ventral segment, brown, shining; plate as high as the length of the segment, lateral lobe barely indicated, anterior margin straight, posterior margin very slightly oblique, *i. e.*, the plate gradually increases in width toward the tip, which is truncate and not arcuate, as in the preceding species. Forceps as in *venusta*.

♀: genital segment a little shorter than the three preceding ventral segments together, laterally more compressed than in *venusta*; upper plate a little longer than the lower one, gradually tapering toward tip, which is straight and not so sharply pointed as in *venusta*; lower plate also simple.

Described from numerous specimens bred from closed mamma-like galls on leaves of *Celtis*.

Pachypsylla (Blastophysa) c.-gemma, new species.

Average length 3.5 mm. Glossy. Dark brown or lighter, head and thorax dirty brownish-yellow or deep gamboge-yellow, with greenish and often reddish tint; front wings uniformly yellowish-brown (lighter or darker); abdomen nearly black, sutures of the segments reddish, often the whole abdomen brownish-yellow. Head vertically inclined, as in the other species, with the eyes a little narrower than the widest part of the thorax; vertex shining, rugoso-punctate, yellowish-gray, twice as wide as long, not narrowing anteriorly, very slightly emarginate posteriorly, anterior margin straight, discoidal impressions large, foveiform, but shallow and ill-defined; median line fine; frontal cones vertical, somewhat variable in form, but usually subtransverse, always rounded at tip, more or less strongly divergent, rugoso-punctate, slightly hairy; antennæ fully as long as the width of the head, less stout than in the other species of the genus, yellow, more or less variegated and tipped with black; joints subturbinate, joint 4 not quite one-half as long as 3, the succeeding joints a little shorter than 4, but not decreasing in length, 9 and 10 closely united and together shorter than the preceding joint; terminal bristles very short; pronotum very short, of equal width, slightly emarginate behind, shining, impunctate; dorsulum formed as in other species, usually shining, finely alutaceous, with sparse transverse aciculate lines, which are sometimes absent; mesonotum formed as in other species, shining, very finely alutaceous; color of dorsulum and mesonotum very variable, usually brownish-yellow with greenish tinge, or yellowish-green with more or less indistinct markings of light brown; sometimes the color is more decidedly yellow, or even orange yellow, or nearly wholly pale green. Wings glossy, decidedly shorter and more leathery than in the other species, decidedly sub-convex, at basal third very slightly wider than at terminal third, transversely rugose, uniformly immaculate, costal margin at base strongly arched, then nearly straight, tip of wing broadly rounded, inner margin regularly curved; venation much less prominent than in the genuine *Pachypsyllas*; pterostigma very indistinct; petiolus cubiti about half as long as the discoidal part of the subcosta, which is as long

as, or a little longer than, the basal portion; radius nearly straight, third and fourth furcals of nearly equal length, terminating very obliquely upon the margin, stem of second fork a little longer than third furcal, first furcal but little longer than the stem of the first fork and one-third shorter than the second furcal, which is but little longer than the fourth furcal; outer basal cell very large and nearly as long as the inner one; base of pterostigma nearer to the middle than to basal third of wing; first furcal terminating at about the middle; margin of first marginal cell as long as that of second; margin of cubital cell shorter. Abdomen in matured specimens dark gray, each segment bordered behind with roseate color, in immature specimens brown or brownish-yellow. Metasternal processes pale-green, elongate oval, obtusely rounded at tip. Femora usually brownish-yellow, sometimes blackish, with exception of the tip; tibiae and tarsi black.

♂: genital segment somewhat longer than the preceding ventral segment; plate as high as the length of the segment, anterior margin straight, posterior lateral lobe very feebly indicated toward the tip, the plate, therefore, slightly wider at tip than at base, posterior edge slightly curved, tip truncate; the lobe is hairy, opaque, rugose, and divided from the main part of the plate by a longitudinal depression; forceps three-fourths as high as the plate, anterior edge slightly convex, posterior edge slightly concave, tip acute.

♀: genital segment somewhat longer in proportion to the rest of the abdomen than in *c.-mamma*, but otherwise not different.

Described from numerous specimens reared from a small, rounded, more or less irregular swelling of the bud of *Celtis*.

The species shows sufficient differences, as compared with the more typical *Pachypsylla*, to warrant separation into a sub-genus, which I would designate by the name of *Blastophysa*, and which in future, with increased material, will probably be accepted as a good genus.

The following dichotomic table gives the principal differences between the three species of *Pachypsylla* just described:

Head and dorsum opaque; front wings submembranaceous or subhyaline, not rugose; pterostigma distinct; both marginal cells very long, narrow, and of about equal size and length; anal style of full-grown larva and pupa long.

Dorsulum and mesonotum alutaceous, glabrous; front wings narrowly rounded at tip, widest in basal half; genital segment of female longer than the rest of the abdomen; anal style of full-grown larva and pupa notched at top ----- *venusta*.

Dorsulum and mesonotum rugoso-punctate, with distinct but very short, sparse pubescence; front wings broadly rounded at tip, widest in terminal half; genital segment of female shorter than the rest of the abdomen; anal style of full-grown larva and pupa pointed at tip ----- *c.-mamma*.

Head and dorsum shining, without pubescence; front wings somewhat convex, basal half not wider than terminal half, broadly rounded at tip, distinctly rugose; pterostigma indistinct; marginal cells less narrow, the first shorter and somewhat smaller than the second; genital segment of female shorter than the rest of the body; anal style of full-grown larva and pupa very short, nicked at tip ----- *c.-gemma*.

Sub-family TRIOZINÆ.

CEROPSYLLA, new genus

Body moderately slender, slightly convex longitudinally, glabrous, impunctate, opaque. Head with the eyes slightly narrower than the widest part of the thorax; vertex nearly half as long as wide, convex anteriorly, slightly emarginate behind; discoidal impressions large and polished, but shallow and ill-defined; frontal cones well separated from, and much depressed below, the plane of the vertex, nearly vertical, a little longer than wide, about half as long as the vertex, not divergent, not narrowing anteriorly, obtusely rounded at tip, jet black, opaque, slightly pubescent; antennæ more than twice as long as the width of the head, thin, terminal joints distinctly broader, joint 3 as long as 4 and 5 together, the last two joints less connate than usual, terminal bristle short. Thorax with the pronotum very short, deeply emarginate behind, lower than the head, and almost covered at the middle by the overlapping dorsulum; dorsulum longer than wide, anterior lobe much more developed than the posterior, laterally convex, gently ascending posteriorly; mesonotum nearly as long as dorsulum, of usual form.

Wings flat, perfectly hyaline, not sculptured, two and one-half times longer than wide, widest beyond the middle, outer costa gradually and slightly arched at base, tip distinctly angulated; basal part of subcosta unusually long, as long as the branch of the second fork; the stems of the two forks not starting from the same point of the subcosta, that of the first fork starting alone from the subcosta, some distance before the usual separation point of the principal veins; discoidal part of the subcosta extremely short—in fact, hardly perceptible; thus the radius, the radial part of subcosta and the stem of the second fork start from nearly the same point; radial part of subcosta but little shorter than the stem of first fork; radius straight, unusually short—shorter than the basal part of the subcosta; stem of second fork running, at basal fourth, very close to the radius, then gradually diverging from it; tip of wing within second marginal cell, but very close to the fourth furcal, which is nearly equal in length to the first and distinctly longer than the third furcal; second furcal nearly twice as long as the third and about as long as stem of the second fork. Basal cells very long, the outer not quite attaining the middle of the wing, the inner reaching beyond the middle; radial cell much shorter than outer basal cell; first marginal cell much larger than the second, but of similar shape.

Ceropsylla sideroxyli, new species.

Average length, 4.2 mm. To the characters given above in the generic description but little remains to be added. The color is greenish-yellow on the upper side, abdomen and under side more decidedly green; dorsal marking of brownish-yellow faintly indicated; antennæ black, with the three basal joints pale yellow; legs yellowish-green or pale yellow. The wings are perfectly colorless and transparent, the veins very fine, blackish. The exceptional arrangement of the venation, especially the almost complete absence of the discoidal part of the subcosta, produces some curious results, viz., the basal part of the subcosta and the radius appear to form a single straight line, and the discoidal cell is triangular, with the angle towards the base of the wings narrowly produced. The

radial part of the subcosta terminates nearly at the middle of outer costa, the radius terminating about half way between the end of the radial part of subcosta and the tip of the wing; the outer basal cell is about one-third longer than the radial cell and little shorter, but much narrower than the inner basal cell.

Described from fourteen specimens.

The secondary sexual parts in the specimens before me are not well preserved, owing to the immature condition of the specimens, and I prefer to leave them undescribed at present.

The form of the head and thorax, and, in fact, the general appearance of this genus, show no important or essential differences from the typical Triozas, but the wing-venation is without parallel in the family, and so remarkable that, with but a single specimen for examination, it might be considered a rather interesting monstrosity, such as can occasionally be observed in large series of specimens of other species. The specimens examined, however, show precisely the same venation, and this character, together with the singular form exhibited in the full-grown larva, necessitates the establishment of a new genus. The specimens before me were bred from the larva, and as they died shortly after acquiring wings, they are more or less immature.

Full-grown larvæ were found by Mr. Wittfeld at Georgiana, in Southern Florida, on the under side of the leaves of *Sideroxylon masticodendron*, imbedded in small scattered cup shaped excavations, which, on the upper side of the leaves, appear as rough, elevated pustules. A white, wax-like (not flocculent) excretion covers the dorsal surface of the larva, and has suggested the generic name.

RHINOPSYLLA, new genus.

Body moderately slender, very slightly convex dorsally, opaque, glabrous, impunctate. Head (including eyes) wider than the widest part of the thorax, obliquely prolonged and narrowing behind the large and convex eyes, which are thus widely distant from the pronotum; hind angles obtuse, hind margin nearly straight, and not quite half as wide as the widest part of the head. Vertex deeply and triangularly excised in the middle of the anterior margin, which is very oblique each side of the excision. The vertex thus appears to be separated anteriorly in two cones pointing obliquely forward, and this peculiar bi-rostrate appearance of the head is enhanced by the basal joints of the antennæ forming apparently the continuation of these cones; no trace of frontal cones; front margin of vertex with-

in the incisure not acute, but very narrowly rounded; anterior ocellus at the bottom of the incisure only visible from the front, but not readily perceptible; discoidal impressions very conspicuous, long, lineiform, reaching the hind margin of the head. Antennæ more than twice as long as the greatest width of the head; joints 1 and 2 longer than usual, joint 3 longer than 4 and 5 together, and at middle distinctly wider than the succeeding joints, but narrower than joint 2. Thorax, with the pronotum moderately short, slightly ascending posteriorly; front and hind margins but slightly curved, the latter, however, narrowly notched at middle; lateral impressions deep and large, situated at the hind margin; dorsulum distinctly wider than long, anterior lobe sub-acuminate in middle of front to fit in the emargination of the pronotum; mesonotum of usual form, subdepressed on the disc, convex at the sides, nearly as long as the dorsulum; metasternal processes small, elongate, pointed at tip. Front wings very long and narrow, more than three times longer than wide, widest at middle, tip distinctly angulated, with the angle more acute than usual, colorless and perfectly transparent, venation fine; basal portion of subcosta nearly as long as the stem of first fork and a little longer than the discoidal and radial portions of subcosta combined; radius straight and not parallel with stem of second fork; stem of second fork nearly twice as long as that of the first; tip of wing distinctly within second marginal cell; outer basal cell as long as radial cell, which is as long as, or little longer than, the margin of the discoidal cell. Anterior legs longer than the others, and with the femora laterally much compressed and curved inwardly.

The form and venation of the wings do not offer any differences from the *Triozinae*, and more particularly from certain typical *Triozas*, while the absence of frontal cones, together with the form of the third antennal joint, seem to point to an affinity with *Bactericera*, *Puton* (a genus which is unknown to me in nature). The remarkable formation of the head, however, removes *Rhinopsylla* not only from the other genera of this sub-family, but from all *Psyllidae* hitherto described. The formation of the anterior legs is also a character not otherwise occurring in the whole family; but this might be a sexual character, as the female is still unknown.

Rhinopsylla schwarzii, new species.

Length, 3 mm. Head and thorax dull brick-red, the latter above indistinctly marked with pale yellow; upper surface opaque, not pubescent, and without other sculpture than the usual very fine alutation. Abdomen greenish, femora red, tibiae and tarsi pale yellow, the former blackish at base. Oblique post-ocular prolongation of the head nearly as long as the anterior portion of the head; anterior median excision of the vertex forming an almost equilateral triangle; the two lobes of the vertex formed by the notch are also triangular, and not more perfect than the front margin of the eyes, which are semi-globular and very prominent; discoidal impressions forming each side a longitudinal line reaching to near the

hind margin of the head, deeply impressed behind and becoming obsolete before reaching the anterior margin of vertex; basal joints of antennæ larger and wider than usual and reddish; joint 2 narrower and shorter than 1, joints 3-6 and the bases of 7 and 8 pale yellow, remaining joints black; joint 3, of the form described above, longer than joints 4 and 5 together; joints 6, 7, and 8 each a little longer than joint 4; 9 and 10 of usual shape, closely connate; terminal bristles long. Pronotum colored as the head, of nearly equal width, laterally less convex than usual, nearly horizontal longitudinally, moderately long, indentation at middle of hind margin acutely triangular; dorsulum with very faint traces of paler longitudinal markings, very little higher than the pronotum. Mesonotum nearly as long as the dorsulum, with two broad pale median bands, separated by a fine subimpressed dark-colored median line, sublateral yellow lines barely indicated. Front wings, of the form described above, colorless, except a slight brown shade alongside the marginal venules; veins fine, yellowish-brown; third furcal one-third shorter than the fourth, and nearly rectangular upon the margin, second furcal about one-third longer than the fourth, strongly arched, first furcal slightly shorter than the third, terminating obliquely upon the margin; outer basal cell much narrower than the inner and as long as the radial cell; inner basal cell attaining the middle of the margin, marginal cells unlike in form but about equal in size. The anterior legs, especially the femora, are much longer than the middle legs; the anterior femora are, moreover, much wider, flattened, and bent inwardly at middle, or rather sinuate at the inner broad side.* The hind legs are nearly as long as the anterior, but the femora are of normal form. Metasternal processes rather widely separated, conical, acuminate.

The genital armature of the male cannot properly be described from the two specimens before me.

Described from two ♂s, found March 11th, 1879, at Baldwin, Fla., by Mr. E. A. Schwarz, to whom I take pleasure in dedicating the species, on low plants in the cypress swamps, but the food-plant of the species still remains unknown.

* This curving of the anterior femora is not equal in the two males before me, being very conspicuous in the one and less so in the other.